

EMISSION INVENTORY

CATEGORIES #784, 785, 786, 787

MISCELLANEOUS EMISSION SOURCES - BIOGENIC

- ISOPRENE (784)

-ALPHA PINENE (785)

- MONOTERPENES (786)

- OTHER UNIDENTIFIED ORGANICS (787)

1999 EMISSIONS

Introduction

Living vegetation throughout the Bay Area produce the biogenic organic emissions covered by these four emission categories. (Such vegetation is considered to be part of the general group known as "area" sources).

Chemical analysis of biogenic emissions by investigators has led to their being classified into four separate chemical groupings. This detail has been maintained in the four categories developed for this Base Year emission inventory, and covered by this methodology (see category titles).

Methodologies

Emissions were obtained from a diskette provided by Keith Baugues (EPA Source Receptor Analysis Branch of the Technical Support Division, Research Triangle Park, North Carolina). Data were provided for each of the Bay Area counties as estimated by EPA for the date May 20, 1988. Data for each county consisted of four estimated emission values, in units of micrograms per hour, for the four organic compound classes represented by the categories covered by this methodology. Diurnal variation data were also provided for each class, as measurements showed that they had varying emission rates over a 24 hour day cycle (due to the effects of sunlight and darkness).

When compared with extremes of summer highs and winter lows, these May emission data reflected temperature conditions somewhat equivalent to average annual temperatures. Since biogenic emission rates vary with temperature, the May emission rate values were taken as being reasonably representative of those for the Bay Area overall, on an annual average basis.

These data were developed by EPA using a computational modeling approach with inputs of (1) county information on the amount of surface covered by various vegetation

types, (2) local meteorological (temperature) data and (3) emission "factor" data for each of those various vegetation types, as a function of temperature.

Estimated average annual organic emissions, in tons per day, are:

for Category #784 (Isoprene):	84.2
for Category #785 (Alpha Pinene):	48.2
for Category #786 (Monoterpene):	51.0
for Category #787 (Other Unidentified Organics):	89.7

Monthly variation

The monthly profile was estimated using monthly average ambient temperatures for the Bay Area. This information was obtained from the Climatological Summary Report from the National Climatic Document Center in North Carolina.

County Distribution

The EPA's data provided to the District contained each category's organic emissions, by county. As Solano and Sonoma counties are only partially located within the District jurisdiction, a fraction of each county's four emission values was used. The fraction value used, for each county, was the fraction of the county land area lying within the District jurisdiction. The emission values shown above for these counties reflect the estimated emissions for their land portions in the District.

TRENDS

History

For the years 1960 - 1989, for each category covered by this methodology, emissions were maintained at the 1990 values.

Growth

For the years 1991 - 2010, for each category covered by this methodology, emissions were also maintained at the 1990 values.

COMMENTS AND RECOMMENDATIONS

Any improved data on the quantity of vegetation types in each county and their associated emission rates, as functions of temperature, would improve the accuracy of emission for these four categories.